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Who Survives?

The Impact of Corruption, Competition and Property Rights across Firms

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Abstract

Size, age, sector, and productivity are commonly cited as factors determining a firm's survival. However, there are several dimensions of the investment climate in which the firm operates that affect whether it continues in business or exits. This paper uses new panel data from 27 Eastern European and Central Asian countries to test the importance of five areas of the business climate on firm exit: the efficiency of government services, access to finance, the extent of corruption or cronyism, the strength of property rights, and the degree of competition. The paper finds that weaknesses in these areas do affect the probability of firm exit—largely in ways that undermine the Schumpeterian cleansing role of exit in raising overall productivity. Greater costs and regulatory burdens raise the probability that more productive firms exit, while less developed financial and legal institutions mitigate forces that would otherwise push less productive firms to exit. Thus, the more productive firms stand to gain the most from improvements in the investment climate, whether that is lowering transaction costs or improving market mechanisms. This holds both within countries and across countries. The impact of a particular investment climate measure can also differ significantly by type of firm, with the focus given to firm size. The differential impact on size can be significant at a size cutoff of 10 or more employees. As these are the firms that are near the threshold of many regulatory requirements, the implications are not just with regard to whether a firm remains in operation, but whether it does so in the formal sector.

This paper—a product of the Macroeconomics and Growth Team, Development Research Group—is part of a larger effort in the department to explore firm dynamics and the microeconomics of growth. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at mhallward@worldbank.org.

Who Survives?
The Impact of Corruption, Competition and Property Rights across Firms

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Introduction

Firms do not all face the same probability of exiting. Several studies have used plant level data to show how size, age, sector and productivity can help predict a plant's survival (Bernard and Jensen (2002); Bernard and Sjoholm(2003); Frazer (2005); Harding et al. (2004)). But these studies do not address the role of the broader business environment in which a plant operates and how it can interact with firm heterogeneity in explaining exit patterns. Using a new panel dataset of 4,800 firms with detailed measures of the business environment collected in a comparable way across 27 countries demonstrates the significance of including investment climate factors in explaining which firms exit. The results show that these factors not only affect the rate of exit, but also the composition of firms that exit.

The paper examines five areas of the investment climate: the efficiency of government services, access to finance, the extent of corruption or cronyism, the strength of property rights and the degree of competition. Many of these dimensions have been found to be important in explaining firm entry, investment and growth. (Acemoglu and Johnson (2004); Aterido et al. (2009); Beck et al. (2005); Dollar et al. (2005); Johnson et al. (2002); Klapper et al. (2004). This is the first paper to test for their importance in understanding firm exit rates.

The measures of the investment climate fall into two broad groups, those that affect transactions costs of doing business and those that affect the market disciplining mechanisms. Delays and red tape are examples of the former. Greater rule of law, more developed institutions – including financial institutions—and greater competition are examples of the latter. The paper looks both at their effects on overall rates of exit as well as their effects on the composition of firms that survive.

The paper finds that increasing transaction costs are associated with higher rates of exit, while weaker market enabling environments tend to lower exit rates. However, in both cases, weaknesses in the investment climate contribute to unfavorable composition effects. In locations with higher bribes, higher crime and greater delays in government services, exit rates are higher – and productive firms are more likely to exit. On the other hand, where legal rights are weak, financial services are less developed and competition is muted, exit rates are lower, with less efficient firms less likely to exit. These effects are found both across locations within a country, as well as across countries grouped according to their level of financial or legal development. Improving the investment climate may or may not lower exit rates, but it should improve the composition of surviving firms, contributing to a more efficient allocation of resources and raising overall productivity.

The paper also investigates whether there are differences across types of firms in the impact of the investment climate on survival, even controlling for productivity. Of particular interest is firm size. It is not the case that the smallest firms (less than 10 employees) are always hit the hardest by a weak investment climate. The smallest firms are disproportionately affected by access to finance, but they are less likely to be affected by regulatory costs, in part because they are often exempt from these requirements. Those in the 10-50 employee range are often worse off than the smallest firms and are particularly affected by competitive pressures and bribes. Weak property rights have a greater impact on larger firms (50 plus workers). Thus this paper argues for the importance of combining firm heterogeneity with disaggregated measures of the business environment to better understand the factors underlying firm exit rates.

The contribution of this paper is fourfold. First, it analyses the impact of the investment climate on a new dimension, namely firm survival. It shows the findings on raising transactions costs and weakening market mechanisms are robust to many alternative measures available. Second, it controls for multiple dimensions of the investment climate simultaneously. Thus omitted variable bias is less likely to be a concern than if only a single dimension is included. Third, it uses comparable firm-level data across 27 countries, allowing for within-country and cross-country variation to be analyzed. Fourth, the disaggregated data make it possible to test for non-linear impacts across important firm characteristics, namely size, age and ownership. Overall, the paper provides evidence that the more productive firms stand to gain the most from improvements in the investment climate, whether that is lowering transaction costs or improving market mechanisms.

The next section provides an overview of the literature. Section 3 describes the data and the model of exit that is used. Section 4 describes the results. Section 5 concludes.

Literature review

Dunne et al.'s (1988) finding that 8-10% of manufacturing firms in the US exited each year, with rates higher for small and younger firms, sparked a large interest in understanding firm exit patterns (Davis et al. (1996), Caves (1998)). Many were surprised at the magnitude of firm closings. In part this had been masked by their additional finding that entry and exit rates were correlated so that net turnover is generally reasonably low. Similar rates have been found in developing countries. Haddad et al. (1996) find the rate in Morocco between 1984-89 is 6 percent; Tybout (1996) report a rate of 10 percent in Chile between 1979-86; Roberts (1996) finds a rate of 11 percent in Colombia over 1977-85. (Haltiwanger et al. (2006)). The data used here, covering 27 countries in Eastern Europe and Central Asia,

over the three year span from 2002 to 2005, falls in this range, with an average annualized exit rate of 7.6 percent.

A number of papers have looked at the role of exit to understand its contribution to aggregate productivity. While based on individual firm records, the data is used to generate aggregate exit rates by sector, size and/or age. Early work focused on the US, but has since been extended to several OECD countries and to a number of middle income countries in Latin America and Central Europe. Exiting firms are generally found to be less productive than incumbent firms. However, the extent of the contribution of exiting firms to overall productivity or the extent of the productivity gap with continuing firms, various considerably across countries. Thus exiting firms account for over 50 percent of the productivity growth in Chile from 1985-1999, approximately 10 percent in Slovenia (1997-2001) and slightly negative contribution in Latvia (2001-2002). Incumbents' productivity is on average 63 percent higher than exiters in Colombia (1987-1998) while it is 4 percent lower in Latvia. (Bartelsman et al. (2004)). The literature is now turning to the question of what determines the variation in the extent of firm turnover and its contribution to productivity. The quality of regulations can be important, in particular that more flexible product and labor market regulations can facilitate the reallocation of resources (Loayza et al. (2005), Pavcnik (2002)).

This paper takes a different approach. Rather than looking at aggregate exit rates, the paper looks at the exit decision from the perspective of the firm. It covers 27 countries with a broad range of levels of income and institutional development. It also takes advantage of a rich set of disaggregated measures of investment climate. Thus multiple measures are available to capture each of the areas of the investment climate that are of interest. And these measures vary sub-nationally. This approach allows for a detailed investigation into how

firm characteristics can interact with a range of investment climate variables in determining who exits.

When taking the firm perspective, models of exit generally emphasize the importance of productivity and productivity shocks in predicting exit. Jovanovic's (1982) model is based on firms that learn about their productivity as they operate. Size and age are linked to exit rates as entering firms are generally small. Based on their realized productivity, firms will either grow and continue in operations or decline and eventually exit. In Hopenhayn (1992)'s model, firms have different productivity levels that evolve according to a Markov process. If firms experience a series of negative productivity shocks, they exit. Melitz (2002) and Ericson and Pakes (1995) extend the framework to include monopolistic and oligopolistic competition. Again, younger firms tend to be smaller and to exit more frequently.

Taking these models to the data, a number of papers look to explain such patterns, relying on firm characteristics such as age, size and sector. Using census data from the United Kingdom, Disney, Haskel and Heden (2003) show the importance of these firm characteristics in predicting the exit of a firm. Controlling for firm exit, they then show that greater competition can raise the productivity of continuing firms. However, they do not link competition to firm exit itself.

Bernard and Jensen (2002) look at the closing of manufacturing plants in the United States. In addition to finding that size and age are negatively correlated with exit, they find that firms that are part of a US multinational face greater rates of exit once other firm characteristics are controlled for, as do plants that are part of multi-plant firms. They also find that increased competition, in the form of imports from low wage countries, significantly increases the probability of exit, particularly for low-wage and labor intensive plants.

One of the few papers that look at the issue of exit in a developing country is Frazer's (2005) examination of exiting manufacturing firms in Ghana. He finds that smaller and younger firms are more likely to exit. He also finds that firms that exit are less productive, but that the effects are not large. He posits that part of the explanation is the presence of policy distortions that keep the market from pushing out less efficient firms. He does not include measures of policy distortions or indicators of a weak business environment to test this more directly, but his findings help motivate the importance of conducting such a test.

The importance of 'institutions' or 'social capital' in understanding longer run growth (Knack and Keefer (1995), Hall and Jones (1999); Acemoglu and Johnson (2004)) has spawned an interest in disaggregating measures of institutions and examining their importance in other dimensions, such as firm entry, investment decisions and firm growth. Klapper et al. (2004) examine the effect of regulation across countries in Europe on entry rates by sector. They find that regulations do retard entry significantly more in sectors that have 'naturally high' versus 'naturally low' rates of entry. Johnson et al. (2002) show the importance of property rights in firms' decision to invest; arguing that secure property rights trump access to finance in these decisions. And Beck et al. (2005) show that financial and legal constraints affect firm growth, particular for small firms, with corruption having weaker effects. In their work, the overall measure of property rights is important, but they find less evidence that more disaggregated measures are significant.

This paper builds on these strands of literature to combine the roles of firm characteristics with disaggregated measures of the investment climate to the issue of exit. Covering 27 countries in Europe and Central Asia using the same survey instrument and sampling methodology, it can take advantage of both differences across countries as well as

across types of firms. The survey instrument also includes a great deal of detail not only on firm characteristics, but on the quality of the business environment in which the firm operates. It controls for multiple measures simultaneously, avoiding potential omitted variable bias present in studies that examine only a single dimension. This is the first paper to use firm-level data on exits to study how investment climate conditions affect exit rates and differentially impact different types of firms.

Impact of the investment climate

The paper tests for the importance of several dimensions of the investment climate. To facilitate their description, they are grouped into those whose effect is likely to raise the transaction costs of doing business (raising costs, delays) and those that affect market mechanisms more fundamentally. More detailed information on specific variables is discussed in the data section below.

1. Factors raising transaction costs: red tape, crime, bribes

Delays and inefficient delivery of services raise the costs of getting business done. Crime can be costly either in terms of goods lost or in terms of necessitating additional security measures. Bribes too raise the cost of transactions. These higher costs are hypothesized to raise the likelihood that firms will exit. These additional expenses make it harder for firms to remain profitable and thus to remain in business.

The one variable in this category that has some potentially ambiguous role is that of bribes or corruption more broadly. While bribes are an expense, broader corruption can potentially tilt market conditions in favor of certain firms. Increasing attention is being focused on the role of corruption in development and trying to measure its cost, not simply in

the size of bribes paid but its impact on firm behavior (Svensson (2003) and (2005); Fisman and Svensson (2007)). This paper uses a number of measures of corruption to examine its role on firm exit and the extent to which it amplifies or dampens the potential contribution that firm turnover can make to aggregate productivity. It could be that in a more corrupt environment firms have to be even more productive to be able to survive. This raising of the productivity threshold for survival would result in the productivity of exiting firms in corrupt areas being relatively higher than for those in less corrupt areas. Alternatively, corruption could allow some very inefficient firms to remain in business. If paying bribes can secure contracts or access to loans that would not otherwise have been granted based on the firm's past performance, the interaction of corruption and productivity could be negative.

The overall effects of corruption depend on two debates. The first is whether corruption is seen as 'grease money' that speeds up transactions or 'sand in the wheels' that weighs down the ability to get things done and muddies the signals of quality in the market. If bribes are really grease money, areas of higher payments could be associated with lower exit rates as paying bribes helps keep things going. Alternatively, if bribes are simply a cost, one would expect areas of higher corruption to be positively associated with higher exit rates. Which of these competing hypotheses is correct can be tested for by looking at the sign of the coefficient on the corruption variables.

A second debate in the literature regards who is the target for unofficial payments and who is able to wield political influence to their benefit. One view is that it is relatively good firms that are targeted by officials for additional payments, either because they attract attention more easily or due to their greater ability to pay. The alternative view is that it is weaker firms that are targeted, either because they have no recourse against such requests or

need such 'favors' to remain in the game.[1] To separate these two views, it is important to look at both the sign of the corruption variable and the interaction of corruption and the performance of the firm. If officials target 'good performing firms' and the bribes are 'sand', one would expect that the interaction term would be positively correlated with exiting. Or if increasingly poor performing firms are faced with lots of additional 'sand', the interaction term would be negative on exiting. On the other hand, if 'poor performing firms' are the ones paying grease money, there could be a positive interaction term on exiting, whereas it would be negative if the productive firms are paying for the 'grease.'

In a regression of the probability a firm will exit, interpreting the sign of the corruption coefficient and sign of a corruption-productivity interaction term

		Bribes targeted to / paid by	
		Productive firms	Unproductive firms
		Corruption coef. / Interaction term	Corruption coef. / Interaction term
Corruption serves as:	Sand	+ / +	+ / -
	Grease	- / -	- / +

2. Factors affecting market mechanisms: competition, finance, property rights and competition

Competition: Greater competition is widely associated with weeding out inefficient firms. Competitive pressure can come from greater exposure to imports, from multinationals operating locally and from other domestic firms.

Finance: Access to finance and the development of financial markets help intermediate transactions and channel resources to their most productive uses, thereby facilitating investment and growth (Levine 2005). With a more developed financial system, market signals are likely to be stronger and the greater discipline on the allocation of finance should facilitate pushing less productive firms to exit.

[1] This debate also makes clear the need to control for potential endogeneity, which is discussed below.

Property rights: The importance of property rights has been tested for in studies of firm growth (Beck et al. (2005)) as well as on firm investment decisions (Johnson et al. (2002)). In the former case, property rights are not seen as important as financial constraints, particularly for small firms. In the latter case, property rights were more significant in explaining a firm's willingness to invest. It should be noted that their strongest results, however, came from measures of corruption rather than confidence in courts themselves. As corruption is examined separately, this section looks at issues of whether courts are believed to uphold property rights and on measures of the rule of law. Stronger court systems and the rule of law are associated with the ability to conduct arms-length transactions and to punish contract violations. As such, they broaden the set of market interactions likely to be undertaken, broader competition and discipline those that violate the rules. Together, these are associated with expanding market discipline, which would likely raise exit rates, particularly of less productive firms.

Who is relatively more affected by a weak investment climate?

Firm Productivity

Theoretical models emphasize the role of negative productivity shocks in explaining exit. To the extent investment climate weaknesses raise the costs of doing business, these are likely to raise the productivity threshold associated with firm exit. Firms would have to be otherwise that much more profitable to meet these higher costs and survive. On the other hand, weaknesses in the investment climate that undermines market mechanisms could serve to shelter firms, particularly less efficient ones, from having to exit. Thus the interactions of productivity with measures of broader access to finance, court strength and competition are

important to test for. If the investment climate affects the relative productivity of exiting firms, this has implications on the efficiency of the allocation of resources in a country and thus on its overall level of productivity.

Firm size

The literature consistently finds that small firms are more likely to exit than larger firms (Roberts and Tybout (1996); Haltiwanger et al. (2004)). Small firms are more likely to lack the scale needed to be more efficient and compete with larger competitors. As many small firms are also new, they do not have the same experience or proven track record of succeeding in business. The question here is whether investment climate conditions exacerbate these trends – or whether there are dimensions of the investment climate that affect them less. Costs, particularly fixed costs that will be relatively higher for small firms, are likely to hurt smaller firms more. Access to credit as well as property rights are touted as the benefits of firms formalizing and thus should be relatively more beneficial for SMEs compared to microfirms.

One issue when looking at the effects of size is that the data source can matter. Studies that rely on census data can have truncated samples. Many censuses only target firms of a certain size, typically 10 employees or more. What is then recorded as 'exit' is a mixture between those firms that truly end operations and those that dip down below 10 employees but who remain in business. The surveys used here also have a cutoff – but it is at 2 employees. Thus, all the firms in the original sample in 2002 have 2 employees or more. In 2005, those with only a single employee are still recorded as surviving, although they were not re-interviewed. This makes it possible to look at the whole range of sizes of firms, with a

third of the sample having less than 10 employees. Results confirm that there can be important differences between firms above and below the 10 employee cutoff.

For studies with census data using a 10 employee cutoff, the smaller firms (i.e. just above 10) are more likely to exit (Roberts and Tybout (1996); Tybout (2000)). However, in a study of microenterprises, Liedholm and Mead (1999) look only at enterprises with less than 10 employees. They find that young firms are most likely to exit, but that exit rates rise again as firms approach the 10 employee mark. In the work here, having a single continuous size variable does show a negative coefficient on size. However, creating dummy variables for three size categories (<10; 10-49, >49) allows for tests of whether there is a non-linearity in the effect of size. The results show that there can be, particularly with respect to competition and some measures of property rights where it is the middle sized firms, those with 10-49 employees, that are hit hardest. Results by Aterido et al. (2009) also confirm that there are non-linearities by size in the impact of investment climate conditions on other dimensions of firm performance, such as growth.

Firm Ownership: State Owned Enterprises

The decision to keep an SOE operating can be related to a number of non-market oriented factors. Their soft-budget constraint makes it possible to continue operations even if they lose money and are not efficient producers. As such, it could be that their overall rate of exit is lower. A second question is beyond a lower average rate of exit, whether they are relatively more sheltered from the conditions of operating in a weak investment climate. If the state ownership shielded the firm from demands for bribes or gave the firm preferential access to the court system, SOEs could be less affected by investment climate conditions;

relative to private firms, the coefficient on the interaction term of an SOE dummy with investment climate conditions would then be negative.

Firm ownership: Foreign Direct Investment

There is a debate as to whether foreign firms are a relatively stable source of investment or whether they are footloose, happy to accept incentives to set up production but quick to move to another location should there be difficulties in operations or a better incentive package offered elsewhere. Bernard and Sjoholm (2003) examine whether foreign firms are more likely to exit, using census data from Indonesia. They argue that they are less likely to – until one controls for size and productivity, and then they are more likely to exit than domestic firms thereby providing evidence that foreign firms can be more 'footloose'.

Firms with foreign partners may be affected differently than domestic firms by a weak investment climate. In some cases, the foreign partner may be able to assist with providing an alternative solution to cope with a weak environment. Thus, in the case of accessing finance; even if local financial markets are less developed, FDI firms should not find this as constraining. However, in other cases, it could be that foreign firms are more affected. This could be the case in navigating through red tape or dealing with corruption. Here, foreign firms may have less understanding of how to operate and so are more likely to suffer in such an environment. On the other hand, a local joint venture partner could be useful in such a situation (Smarzynska and Wei (2000)). Distinguishing joint ventures from wholly- foreign owned firms can test for the importance of this in the exit decision.

Empirical model of the exit decision

The model presented here assumes the entrepreneur maximizes the expected discounted value of net cash flows. Each period the entrepreneur faces the choice as to whether to continue operations or to close down/sell the business. If the firm remains in business, it faces a net profit function:

$$R(\mu,\nu,\gamma,i) = \pi(\mu,\nu,\gamma)\text{-}f(\nu,\gamma,i).$$

The gross profits, π, are a function of firm state variables, sector-specific market conditions, and γ, business environment conditions that vary across locations. From this is subtracted the costs or investments associated with remaining in business. These too could be a function of sector and location conditions. The entrepreneur would receive θ if the firm was closed or sold. Thus, the value function is:

$$V_{it}(\mu,\nu,\gamma) = \max\{\theta_t, \sup R(\mu,\nu,\gamma,i) + \beta E[V_{it+1}(\mu_{t+1},\nu_{t+1},\gamma_{t+1}) \mid I_t]\}$$

Where β is the discount rate and I_t is the information known at time t. Given the current variables of μ,ν and γ, if the expected discounted value of net profits is below θ, the firm will exit. Thus, what is observed is a indicator function, Y_t, such that Y_t equals 1 if the firm exits and 0 if it continues in operation.

$$Y_t = \begin{cases} 1 & \text{if} \quad Y_t < \underline{y}(\mu,\nu,\gamma) \\ 0 & \text{otherwise} \end{cases}$$

This equation is then estimated in reduced form, using a probit specification with firm characteristics, sector dummies, country dummies and various measures of the business environment.

Data description

The data covers 27 countries in Eastern Europe and Central Asia as part of the Business Environment and Enterprise Performance Surveys conducted jointly by the World Bank and the EBRD. The initial survey was fielded to 6667 firms in 2002, with a follow-up round in 2005 that covered 4813 of the same firms. Table 1 provides basic summary statistics. Firms were asked a number of questions on the business environment in which they operate, including both objective and subjective questions. Objective questions include the monetary costs or time needed to comply with various regulations or procedures. The range of topics covered includes: property rights, crime, access to finance and infrastructure services, corruption, cronyism, competition and regulation (see Table 2 for description and Table 3 for correlation matrix). In addition, there is information on firm performance, including the size of the firm, its sales and employment growth in the previous 3 years and many characteristics of the firm.

Measuring 'exit'

The measure of 'exit' is defined in two ways. The stricter definition is 'observed exits'. It is based on confirmation that the business interviewed in 2002 had indeed closed or gone out of business by 2005. However, this was not possible to ascertain with certainty in many cases as the entrepreneurs could not always be located. So, a second definition is also used. This includes all the 'observed exits', plus those cases where enumerators were unable to locate the enterprise – it was no longer in operation at the same location or with the same phone number and no new contact information was available with the same firm name. Firms that were acquired and remained in the same location are classified as survivors. Only if they moved and changed their name and contact information would the firm be classified as an exit. It is possible that in this second measure, some firms did in fact remain in

operations at another location. However, this noise in the measurement would work to make it harder to find robust patterns in the data.

In both cases, the definitions are clear to exclude as exits those firms that did not participate a second time. There are two possible sources of attrition. From the first survey, respondents were asked for permission to return again 3 years later. In three-quarters of the cases, permission was granted. One potential concern is that there is selection bias based on which firms granted permission. A Heckman selection model was run, including firm characteristics (size, age, ownership, productivity) as well as sector dummies and country dummies. The seniority of the respondent was found to be significantly correlated with whether permission was given (those who were not CEOs or the owner were less likely to give permission), but was uncorrelated with subsequent exit or survival. The null hypothesis of the independence of the two regressions could not be rejected at the 0.4 level.

Of those that did give permission, attempts were made to re-contact all of them. A second source of potential attrition is that of those that were found, not all did in fact answer the survey. While this can be of concern for other panel analyses, here it is not of concern. This paper does not rely on the answers to the second questionnaire. Even if they did not answer the questionnaire a second time, their continuation in business was confirmed and so they can be included as a surviving firm.

The results shown primarily use the second definition of exit as this allows for the inclusion of more countries (5 countries did not distinguish between those that were verified as closed) and provide a significant number of additional instances of exiting. However, as Table 8a demonstrates, repeating the regressions using the more restrictive definition, the results are qualitatively the same.

One potential issue for the interpretation of the results is the assumption of whether or not an 'exit' should be understood as a failure. Exits are often assumed to be failures; that firms were unable to continue in operations, either at all or at that location. Thus our interpretation of a weaker investment climate leading to greater exits is one where firms are either driven out of business or move to 'greener pastures' (i.e. it is not an instance of failure on the part of the firm, but on the part of the location to support that firm). However, it is possible that a subset of firms captured in our measure are in fact examples of success – i.e. firms exit because they were acquired or merged with another firm, and thus moved (possibly within the same city) with a new name.[2] For these firms, the quality of the investment climate did not detract from their performance; it is even possible that their success in an otherwise poor investment climate is exactly what made them attractive for acquisition.[3] Unfortunately we cannot know how many instances we have of this. But to the extent that 'successful' firms are in our pool of exiters, they would likely bias against finding significant results of a weak investment climate increasing exit rates. Table 8 shows robustness checks that look at subsets of exiting firms based on other information in the 2002 data to classify them as more likely to be failures. Table 8b looks at those firms that were already in arrears in 2002. Table 8c excludes those firms that are most likely to be 'good performers/attractive targets', i.e. those that are not in arrears and are above their city-sector median price-cost

[2] Within this group of acquired firms, recall that those that continue to operate in the same location or with the same name remain in the sample as survivors. This is most easily confirmed by the presence of 29 firms that were acquired by a foreign firm during the 3 intervening years (and answered both questionnaires). These acquisitions are not represented as 'exits' in the data.

[3] There is a hypothesis that in an area of corruption or lots of red tape is precisely when having a local partner is more desirable. This is particularly true for multinationals that are likely to be less well situated to navigate this environment. This can be tested for looking at whether JV or wholly owned foreign firms are more likely to be in locations of higher corruption and if JVs are then significantly less likely to exit from these locations. The results do confirm that joint venture firms are significantly less likely to be impacted by the negative effects of cronyism, although other measures of corruption do not show any difference across JVs versus wholly owned foreign firms.

margins and city-sector median capacity utilization. The results are robust to both definitions, although the competition and finance variables are weaker when limited to firms in arrears.

Measuring the investment climate

The variables on the investment climate include a large set of potential indicators. *Government services and red tape:* the number of days it takes to clear customs; the share of production lost due to power outages; the time management spends dealing with officials; and the burden of labor regulations in keeping firms from their desired level of employment.

Corruption: Measures of corruption are the share of sales paid as a bribes to help 'get things done'; the sale of a government contract that is paid as a bribe, as well as how frequently firms perceive bribes as being paid 'to get things done'. There are also questions on the degree of uncertainty about the size of the expected gift and whether firms have recourse should a bribe be demanded.

Competition: While other studies have looked at concentration ratios, this information is not available for this dataset as it uses a sample of firms. Rather, entrepreneurs rank the extent of competition from imports, pressure to either reduce costs or increase innovation from domestic or foreign sources. It also includes a measure of the degree of anti-competitive practices as an obstacle entrepreneurs face in operating and expanding their businesses.

Access to finance: Two measures are constructed based on the incidence of borrowing with the sector-location of the firm: the share of firms that have a loan, and the share of financing that comes from formal sources. Two additional measures are the degree to which

access to capital or the cost of capital is perceived to be an obstacle to the operation and growth of a business.

Property rights and court strength: This set looks more at the efficacy of the judicial system and contractual rights vis a vis other private parties. It includes the confidence in the judicial system to uphold property rights, the efficiency of the legal process, security of titles to land, and the extent of contract violations with buyers and suppliers.

The investment climate variables described above could potentially be endogenous to the firm's subsequent exit. If the firm is performing poorly, it could be more likely to report that external constraints are larger. Or, it could be that better performing firms experience constraints as more binding (Hallward-Driemeier and Aterido (2009)). On the other hand, with a lag of up to three years between the surveys, this is less of an issue than a purely contemporaneous regression of performance on investment climate responses. The concern is further mitigated by averaging the indicators by the city in which the firm is located.[4] Many regulations or public services either have a local component or are implemented / enforced locally so that it is meaningful to look for variation at a sub-national level.

Results

Table 4 reports the effect of firm characteristics in predicting exit. Overall, 22.5 percent of firms exited over the three years. The most significant predictor of exit is firm size. This finding is consistent with the broader literature; that turnover is highest among the smallest firms. For a ten percent increase in employment size, the probability of exit falls by 3 percent. Age, too, is significantly negatively associated with exit. Looking at exporters

[4] In the case of competition, the city-sector seemed more appropriate. Results were repeated using city-sector averaging and were consistent.

and firms with foreign owners, there is no significant association with exiting. However, state owned enterprises are significantly less likely to exit; their exit rates are about one third lower than private firms. Those SOEs that remain are also less productive – their average value added per worker is on par with that of the average exiting private firm. Firms with rising sales are less likely to exit, while those with falling sales are more likely to exit, but the effects are not statistically significant. The overall level of capacity utilization is not found to be significant. Looking across the regions in the area, firms in the EU accession countries are significantly less likely to exit than those in CIS countries. Within sectors, those in retail trade are the most likely to exit. These results all include country dummies to capture differences in level of income, phases of the business cycle, macroeconomic conditions etc. Results that instead controlled for these country characteristics directly were very similar and so are not reported here. What is important, however, is that these patterns hold both across and within countries. The full set of firm characteristics are included in all the regressions as controls, but are not reported due to space constraints.

Table 5 provides the results of combining measures from each investment climate thematic category simultaneously. The richness of the dataset allows for additional variables to be substituted. Doing so produced similar results, confirming the robustness of the findings presented here. That so many variables remain significant to the inclusion of other variables also assuages fears that any given variable could be proxying for a broader set of conditions.

Two sets of measures are found to raise the probability of exit: measures of red tape and bribes. Management time spent with officials is associated with higher rates of exit. Greater frequency of bribes also raises the probability of exit. The result on the size of the

bribe paid is somewhat smaller. Controlling for these other measures of bribes, greater certainty about the amount of bribe to be paid lowers the probability of exit as does having recourse to paying bribes. Together these results strongly support the importance of cutting down on corruption to reduce exit rates. Additional payments are not the only way that corruption can be manifest. Having undue influence in setting policies and regulations is another. In areas where more firms report that large firms exert such influence, firms are significantly more likely to exit, although the effect is less significant across countries.

On the other hand, variables more closely associated with undermining market mechanisms were found to lower the probability of firm exit. The lower the extent of competition, the lower the rate of exit. The strongest effects come from domestic pressure to cut costs or to introduce new products, followed by pressure from customers. Pressure from foreign producers and competition from imports were not statistically significant overall. For finance, what is significant is the share of firms in a location-sector that have a loan. Exit rates of firms that are located in an area where fewer firms have loans experience lower rates of exit; locations with more developed financial systems are more dynamic. In contrast, variables capturing the cost of finance were not significant. Weaknesses in the legal system were also strongly associated with higher rates of exit.

Table 5 column 4 repeats the regression, this time including cross-country variation. Instead of country dummies, a number of country controls are included. The results are very similar. The final column then repeats the regression of column 3, but only for small, domestically owned firms. This is to test for the possibility of a location selection bias. Multinational corporations – and likely larger domestic firms – are more likely to consider multiple locations for their operations. This could induce a selection bias, with firms

choosing to be in locations that minimize their chances of exit. Excluding these firms confirms the robustness of the results.

Are more productive firms disproportionately hurt by a weak investment climate?

Table 6 reports the effects of interacting the investment climate measures with firm productivity to see what effects they would have on the compositional effect of exiting firms. The effect of productivity itself helps to lower the probability of exit, although it is not always statistically significant. What is true is that the compositional effect all works in the same direction; weaknesses in the investment climate are associated with raising the probability that more productive firms exit.

Take bribes. Now the direct effect is actually insignificant. But the interaction term is significant and positive. For bribes above the median level of frequency, more productive firms are more likely to exit. Only at low levels of bribes does greater productivity raise the probability of survival. For competition, the direct effect of the lack of competition still lowers the probability of exit. But the interaction with productivity is also large and positive. Only for measures of competition stronger than the median point of the scale (i.e. below 4) is the overall effect of increasing productivity decreasing the probability of exit. The same is true for finance and property rights; only in those environments where they are above the median strength does productivity contribute to greater probabilities of survival. In locations with less developed financial and legal infrastructure, the effect is to increase the probability that productive firms will exit.

Robustness checks: A number of robustness checks were used. The first set deals with altering the definition of exit. As mentioned in the description of the data, there is a potential that some of the firms that are included as 'exiting' were in fact in business but some reason were not found by the enumerators. Table 7a reports the results just looking at those for which the enumerators could verify that the firm had gone out of business. The pattern of the results holds although the coefficients are somewhat smaller, particularly for competition.

Another question is whether the finding that more productive firms are likely to exit where investment climates are weak should be understood as good firms failing or leaving for greener pastures or whether they represent 'good exits', i.e. they were attractive acquisition targets. Table 7b with 'bad exits 1' looks at those firms that were already in arrears in 2002. These are more likely exits that ended in failure. 'Bad exits 2' removes the better performing firms that might be attractive acquisition firms, i.e. those with above city-sector median operating margins and above city-sector median capacity utilization.[5] For both sets, the results do hold. The coefficients drop somewhat in the case of only 'bad exit 1' (in arrears) and the market cleansing effects are more apparent with 'bad exit 2'. The overall story can be understood as one where weak investment climates are more likely to push out more productive firms.

As a further robustness check, additional measures of good performance were used. In addition to firm productivity, operating margins and capacity utilization were tested. The results using operating margin are even larger than using productivity, particularly the effects of competitive pressure and court strength. For capacity utilization, results on bribes remain particularly strong, but some of the interactions otherwise lose significance. Additional

[5] Strictly, it is very closely aligned with the true operating margin, but it does exclude some overhead costs.

measures such as whether a firm had ISO certification, licenses foreign technology generated similar patterns, but were not as robust.

Are smaller firms disproportionately hurt by a weak investment climate?

Access to external finance is a key area where smaller firms are disproportionately hurt. However, as Table 8 illustrates, the smallest firms are not the ones most hurt by a lack of property rights. In addition to the reported measure on insecure property rights, variables of limited access to land titles, contract violations and inefficient judiciary are all less of an obstacle for small firms than for large firms. With small firms less likely to own land, engage in formal contracts with suppliers or use the courts, it is not surprising that small firms are less affected by how well they are functioning. For large firms, they are more likely to engage in arms length transactions and there are often fewer acceptable alternative means of resolving disputes than the court system. Transparency about the content of laws and regulations also serves to help larger firms relative to smaller firms. So in all these cases, larger firms are hurt relatively more by weak property rights or poorly functioning courts.

Bribes have a larger impact on mid-sized firms. To the extent that bribes represent a fixed cost, they would be proportionately higher for small firms. But as the smallest firms have less ability to pay, larger firms may be targeted more for payments. SMEs would be subject to the fuller array of regulations while more microenterprises are generally not, it is not surprising the concerns of undue influence are less of a constraint for the smallest firms. However to the extent that policy makers are keen to encourage firms to become formal, these results show that how regulations are passed and whose interests they serve will have an important impact in helping make it attractive for firms to become fully formal firms.

The effect of competition is also significant for firms in the 10-49 employee range. In fact, the effect is double that of larger firms. That many smaller firms are not necessarily aiming to grow (Maloney (2004); Lindhold and Mead (1999)) and thus less concerned about being too competitive, it is not altogether surprising that they respond least to potential sources of competition. For firms reaching past the 10 employee mark and having to comply with more regulations, and entering markets where they are starting to be in more direct competition with larger players, competition is felt more keenly.

Are younger firms disproportionately hurt by a weak investment climate?

Many of the arguments here mirror those of smaller firms. But one would expect that the degree of competition may matter more for younger firms as they have less of a proven trackrecord of succeeding in business.[6] As shown in Table 9, greater competition does raise the probability of exit – and particularly for the youngest firms. For old firms (operating 15 years or more), there is virtually no effect of competition on their exit rates.

Are SOEs relatively more sheltered from weak investment climates?

Looking at the results, it is true that the coefficient on SOEs itself is often significantly negative. SOEs do not exit as frequently as their private sector counterparts, controlling for age, size, export orientation, sector, capacity utilization and trend in sales. This is true controlling for countries too. However, there is no strong pattern interacting a dummy for SOEs with investment climate conditions. Thus the data does not support the general hypothesis that SOEs enjoy greater shelter from IC conditions. There is an average effect across the group, but IC conditions then do not have a differential impact.

[6] Of course the degree of competition can affect entry and therefore the number of young firms that are there. We cannot control for this with this dataset.

One way to control for the average level of assistance SOEs receive is to examine a variable that indicates whether SOEs receive government subsidies or assistance. Half of the SOEs report receiving direct subsidies. Distinguishing SOEs with and without subsidies, one finds those with subsidies have somewhat more negative interaction terms with IC conditions indicating that they are sheltered somewhat, but the difference is not significant at the 5% level. Thus, SOEs are more likely to survive, but it is not simply due to facing less harsh investment climate conditions.

Are firms with foreign partners or owners more or less sheltered from weak investment climates?

Foreign firms could be less sheltered from a weak investment climate if they have less experience in how to operate in a weaker investment climate. Overall, this is not found in the data. Distinguishing between joint ventures and wholly foreign owned firms allows for the hypothesis to be refined. If having local knowledge or connections matters, joint venture are better able to deal with issues of red tape or corruption than wholly foreign owned firms. The results do confirm that joint venture firms are significantly less likely to be impacted by the negative effects of cronyism, although other measures of corruption do not show any difference across JVs versus wholly owned foreign firms.

Foreign firms might also be more sheltered from a weak investment climate if they are able to locate in special economic zones, have access to foreign finance or enjoy exceptions to certain regulatory or taxation obligations. However, one potential concern is if there is a selection bias of foreign firms; that they would only have located in areas with a better investment climate so that a lack of a finding that investment climate affects their rate of exit is due to the fact that MNCs do not enter in poorer investment climate areas to begin

with. For many smaller domestically owned firms, they are less mobile, they will have been established where the entrepreneur lived. For larger domestic firms, they too would be more mobile in choosing their locations within the country. Restricting the sample to only larger firms (reported are cutoffs of 50 or more employees), FDI firms do appear to be burdened more by some IC conditions. Thus, where the influence of big corporations or cronies is particularly strong, foreign firms are more likely to exit. If the judiciary is inefficient and/or contract violations are more numerous, again FDI is more likely to exit. On the other hand, on issues where larger firms would have recourse to deal with weak environments, (e.g. access to finance, ability to provide own generator to avoid reliance on an unpredictable public grid), there is no significant difference between foreign firms and large domestic ones.

Are there differences by level of institutional development?

Table 11 then looks to see if these results are affected by the level of financial and legal development of a country. The sample is split into countries with greater financial development, as measured as domestic credit to the private sector as a share of GDP. Rates of exit are lower in countries with less developed financial systems. Within each sample, measures of a firm's own access to finance remains a significant variable in less financially developed countries, but not in more developed countries. In the more financially developed countries, it is the cost of finance that remains significant.

Table 11 divides countries using the Kaufmann-Kraay 'rule of law' variable. Those below the average level are classified as 'poor' rule of law, those above as 'stronger'. A second classification uses the Doing Business measure of how long it would take for a firm to follow all the official procedures involved with bankruptcy. Rates of exit are again higher in countries with better rule of law. For those with weaker rule of law, costs associated with

enforcing contracts, time to get permits and court delays all serve to raise the rates of exit, but are no longer significant in countries with a stronger rule of law or more efficient bankruptcy proceedings.[7] If firms can turn to the legal system and courts to support their property rights, there are fewer violations and their impact is less detrimental as there are better procedures for getting them redressed.

Conclusion

The results confirm that weaknesses in the investment climate do impact the probability that firms will exit. And these effects vary in important ways across firms. Exit rates are generally higher for small and young firms – and these patterns are exacerbated by less access to finance and less efficient government services. However, there are also dimensions of the investment climate that impact larger firms more, including property rights protection, corruption, cronyism and anticompetitive practices. The effects can be non-linear, with SMEs (10-50 employees) hurt the most. These findings reinforce the importance of looking at the full spectrum of firm sizes – not just at those above a certain minimum number of employees – in drawing conclusions about the impact on small firms.

The effects of the investment climate on the relative productivity of exiting firms are particularly striking. Those dimensions of a weak investment climate that act increase transaction costs drive out firms – including more productive ones. Other areas demonstrate the importance of developed market institutions (courts, competition and finance) in ensuring greater efficiency in the composition of surviving firms.

[7] This work is being extended to look at how the impact of the investment climate could vary across groups of countries, looking at the EU accession countries, remaining Eastern Europe countries and former members of the Soviet Union. Bribes act more like 'sand' in the EU accession countries, while working more like grease in the Balkan region. This will be explore in future research.

The two broad dimensions of the investment climate also reinforce each other. Where the rule of law is stronger, these effects of increased costs of doing business are no longer as significant – there are fewer instances of such costs and there is a mechanism for redressing them. Improving the investment climate will not necessarily reduce the overall rate of firm exit, but it will make it more likely that more productive firms survive.

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Table 1a: Number of observations

Number of firms in 2002	6,667
Out of which:	
Number of firms that gave permission to be re-contacted in 2005	4,870
Out of which:	
Number of firms that had exited by 2005	1,097

Table 1b: Descriptive Statistics – Firm Characteristics

Variable	Mean	Std. Dev.	Min	Max
Size	143.43	528.49	2	9960
Age	14.68	18.28	3	202
Exporter	0.25	0.44	0	1
Fdi	0.16	0.37	0	1
Soe	0.14	0.35	0	1
Utilization	79.95	20.22	1	100
Sales up	0.54	0.50	0	1
Sales down	0.27	0.44	0	1

Table 1c: Sectoral Coverage

Sector	# firms	Freq
Mining	78	1%
Construction	808	12%
Manufacturing	1685	25%
Transport	524	8%
Trade	2027	30%
Real estate	675	10%
Hotels and Restaurant	457	7%
Other services	413	6%

Table 1d: Exiting and surviving firms

	Exiting firms	Surviving firms
Average size	88	148
Average age	12.5	15.7
Average productivity ($VA/L)	8532	7819

Table 1e: Relative productivity of surviving firm to exiting firm

	Relative productivity
Small	1.15
Medium	1.05
Large	1.13
SOE	1.10
FDI	1.05
EU accession	1.16
Non-EU accession	0.93
SOE survivor to private exiter	0.95

Table 2a: Indicators of weak investment climate (higher values correspond to greater costs, delays, obstacles)

IC variable	Mean	Std. Dev.	Min	Max
Bribe frequency	2.63	1.50	1	6
Bribe amount	1.51	3.19	0	50
Influence of big firms	1.64	1.34	0	4
Influence of cronies	1.52	1.41	0	4
Inefficient judiciary	2.05	1.08	1	4
Weak title to land	1.60	0.94	1	4
Mgmt time	7.55	11.59	0	90
Protection pay	0.17	0.38	0	1
Customs (time to clear)	3.87	6.88	0	90
Instability	2.79	1.12	1	4
Labor regulation distortion	0.14	0.21	0	2
Contract violations	2.23	1.08	1	4
Lack access to finance	2.32	1.16	1	4
Cost of finance	2.53	1.13	1	4

Table 2b: Indicators of stronger market institutions

IC variable	Mean	Std. Dev.	Min	Max
Property rights	3.52	1.39	1	6
Formal finance	11.99	23.70	0	100
Have external loan	0.40	0.49	0	1
Competition from imports	2.52	1.47	0	5
Customer pressure to innovate	2.91	0.99	1	4
Customer pressure to cut costs	2.78	1.03	1	4
Domestic pressure to innovate	2.74	1.02	1	4
Domestic pressure to cut costs	2.67	1.06	1	4
Foreign pressure to innovate	2.03	1.10	1	4
Foreign pressure to cut costs	1.98	1.09	1	4
Bribe recourse	2.94	1.52	1	6
Bribe certainty	2.67	1.64	1	6
Information about law	3.93	1.49	1	6

Table 3: Correlation Matrix

	Size	Age	Exporter	FDI	SOE	Utilization	Sales up	Sales down	Labor reg. distortion	Freq. of bribes	Influence of big firms	Share with a loan	Cost of finance	Contract violations	Inefficient legal sys	Strength of courts
Size	1.000															
Age	0.415*	1.000														
Exporter	0.308*	0.14*	1.000													
FDI	0.14*	-0.11*	0.244*	1.000												
SOE	0.34*	0.390	0.017	-0.154*	1.000											
Utilization	0.003	-0.071*	-0.023	0.041*	-0.022	1.000										
Sales up	0.161*	-0.056	0.138*	0.102*	-0.022	0.11*	1.000									
Sales down	-0.13*	0.063*	-0.108*	-0.077*	0.002	-0.185*	-0.67*	1.000								
Labor reg. distortion	-0.025*	0.003	-0.001	-0.002	0.003	-0.019	0.098*	-0.069*	1.000							
Freq. of bribes	0.074*	-0.07*	-0.053*	0.015	0.023	-0.020	0.057*	-0.019	0.193*	1.000						
Influence of big firms	-0.028*	0.073*	0.092*	-0.008	-0.020	-0.032*	-0.027*	0.063*	0.119*	-0.147*	1.000					
Share with a loan	-0.009	0.039*	0.096*	0.052*	-0.035*	0.020	0.116*	-0.093*	-0.023	-0.372*	0.189*	1.000				
Cost of finance	-0.017	0.078*	0.019	-0.015	0.017	-0.037*	-0.032*	0.075*	0.129*	0.164*	0.401*	0.06*	1.000			
Contract violations	0.048*	0.034*	0.086*	0.037*	0.027*	0.008	0.06*	-0.018	0.065*	0.166*	0.541*	0.237*	0.378*	1.000		
Inefficient legal sys	0.000	0.089*	0.084*	0.044*	0.013	0.006	0.028*	0.013	0.25*	0.161*	0.536*	0.192*	0.449*	0.682*	1.000	
Strength of courts	0.035*	0.007	-0.007	-0.006	-0.007	-0.008	0.003	-0.008	-0.066*	-0.391*	0.017	0.018	-0.078*	-0.131*	-0.249*	1.000
Pressure to innovate	0.007	0.05*	0.056*	-0.009	-0.03*	0.039*	0.092*	-0.101*	-0.009	-0.243*	0.399*	0.404*	0.206*	0.355*	0.263*	0.068*

Table 4: Firm Characteristics and Exit Rates

	(1)	(2)	(3)
Employees	-0.03		-0.03
	(8.32)***		(6.66)***
Age		-0.04	-0.01
		(4.70)***	(1.47)
Exporter	0.03	0.03	0.03
	(1.48)	(1.59)	(1.52)
FDI	0.02	0.02	0.02
	(1.22)	(1.27)	(1.25)
SOE	-0.07	-0.08	-0.08
	(4.51)***	(4.14)***	(4.45)***
Utilization	0.00	0.00	0.00
	(0.75)	(0.69)	(0.79)
Sales up	0.00	0.00	0.00
	(0.05)	(0.04)	(0.05)
Sales down	0.01	0.01	0.01
	(0.66)	(0.63)	(0.66)
EU	-0.13	-0.12	-0.13
	(2.73)***	(2.49)***	(2.67)***
Balkan	-0.05	-0.06	-0.06
	(1.08)	(1.01)	(1.02)
Sector dummies	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes
Obs	4799	4813	4668
LR chi2	469.20	425.61	473.90
Prob > chi2	0.0000	0.0000	0.0000

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Probit regression on probability a firm exits, marginal effects reported.

Table 5: Investment Climate and Exit Rates

	(1)	(2)	(3)	(4)	(5)
Lnsize	-0.03	-0.03	-0.03	-0.03	-0.03
	(7.08)***	(7.07)***	(7.04)***	(7.04)***	(7.04)***
Management time with officials	0.04		0.03	0.04	0.053
	(1.68)*		(1.42)	(1.50)	(1.54)
Delays through customs		0.09			
		(1.27)			
Bribe frequency	0.07		0.06	0.05	0.04
	(2.12)**		(2.09)**	(1.90)*	(1.89)*
Influence of big firms		0.09	0.08	0.04	0.05
		(3.03)***	(1.79)*	(1.28)	(1.67)
Limited pressure to innovate	-0.07	-0.07	-0.07	-0.08	-0.06
	(2.52)**	(2.31)**	(2.21)**	(1.91)*	(2.12)**
Limited financial access	-0.14		-0.10	-0.12	-0.12
	(1.82)*		(1.80)*	(1.97)**	(1.89)*
Cost of finance		-0.00			
		(0.04)			
Insecure property rights	-0.06	-0.08	-0.08	-0.10	-0.09
	(1.72)*	(2.40)**	(2.19)**	(1.91)*	(2.30)**
Lack of transparency of law		-0.08	-0.09	-0.01	-0.08
		(2.81)***	(2.94)***	(0.89)	(2.63)***
Firm characteristics	Yes	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	No	Yes
Observations	4777	4777	4777	4777	3376
LR chi2	512.74	511.12	508.95	508.95	528.41
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000

Probit regressions on probability a firm exits, marginal effects are reported.
Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
(4) includes GDP per capita, GDP growth, inflation, and openness to trade as country controls.
(5) is limited to firms that are locally owned and less than 150 employees to control for possible location selection bias.

Table 6: Are Productive Firms hurt more by a Weak Investment Climate?

	Management Time	Bribe frequency	Limited competitive pressure	Limited financial access	Insecure property rights
Lnproductivity	-0.106	-0.118	-0.135	-0.053	-0.147
	(2.86)***	(2.39)**	(2.37)**	(2.01)**	(2.09)**
IC variable	0.101	-0.004	-0.130	-0.327	-0.113
	(1.72)*	(0.09)	(2.63)***	(2.35)**	(2.34)**
IC× lnproductivity	0.041	0.049	0.046	0.104	0.038
	(1.61)	(2.67)***	(2.18)**	(1.65)	(1.92)*
Obs	2759	2759	2759	2759	2759
LR chi2	322.45	324.26	321.07	319.22	320.02
Prob > chi2	0.00	0.00	0.00	0.00	0.00

Probit regression, marginal effects reported. Dependent variable is whether firm exited.
All regressions have controls for firm characteristics, the other investment climate variables, sector, city and country dummies included. Absolute value of z statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Using Alternative Measures of Exit

Table 7a: Restrict 'exit' to those verified to have closed

	Management time	Bribe frequency	Limited competitive pressure to cut costs	Limited external loans	Insecure property rights
Lnproductivity	-0.054	-0.014	-0.035	-0.032	-0.073
	(1.83)*	(1.34)	(1.27)	(2.13)**	(1.61)
IC variable	0.002	-0.002	0.014	-0.162	0.012
	(0.07)	(0.23)	(0.47)	(1.98)**	(0.39)
IC × lnprod	0.021	0.010	0.012	0.077	0.020
	(1.98)**	(1.90)*	(1.58)	(2.01)**	(1.54)
Observations	2323	2323	2323	2323	2323
LR chi2	89.14	88.19	85.39	88.16	87.43
Prob > chi2	0.00	0.00	0.00	0.00	0.00

Table 7b: Restrict 'exit' to those who had been in arrears

	Management time	Bribe frequency	Limited competitive pressure to cut costs	Limited external loans	Insecure property rights
Lnproductivity	-0.014	-0.038	-0.011	-0.020	-0.079
	(1.87)*	(1.70)*	(1.64)	(2.74)***	(2.54)**
IC variable	-0.002	-0.018	0.029	-0.019	-0.056
	(0.28)	(0.95)	(1.28)	(2.46)**	(2.60)***
IC × lnprod	0.010	0.015	0.003	0.012	0.021
	(2.59)***	(1.84)*	(1.43)	(3.61)***	(2.47)**
Observations	2649	2649	2649	2649	2649
LR chi2	120.89	115.70	114.26	126.22	121.24
Prob > chi2	0.00	0.00	0.00	0.00	0.00

Table 7c: Restrict 'exit' to exclude those with above city-sector median productivity and utilization

	Management time	Bribe frequency	Limited competitive pressure to cut costs	Limited external loans	Insecure property rights
Lnproductivity	-0.022	-0.072	-0.109	-0.020	-0.154
	(1.48)	(1.57)	(2.04)**	(1.31)	(2.35)**
IC variable	0.001	0.012	-0.099	-0.019	-0.108
	(0.07)	(0.31)	(2.15)**	(1.26)	(2.42)**
IC × lnprod	0.018	0.029	0.038	0.014	0.042
	(2.34)**	(1.75)*	(1.92)*	(2.13)**	(2.25)**
Observations	2759	2759	2759	2759	2759
LR chi2	295.58	293.27	292.73	292.13	295.02
Prob > chi2	0.00	0.00	0.00	0.00	0.00

Absolute value of z statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

Probit regression, marginal effects reported. Dependent variable is whether firm exited.

All regressions have controls for firm characteristics, other investment climate variables and sector, city and country dummies included.

Table 8: Investment Climate Impact by Size

	Management time	Bribe frequency	Limited competitive pressure	Limited access to Finance	Insecure property rights
SMEs (10-50 employees)	-0.07	-0.02	-0.26	-0.023	0.07
	(0.68)	(0.19)	(2.58)***	(0.80)	(0.57)
Large (>50 employees)	0.17	-0.21	-0.20	-0.025	0.13
	(1.28)	(2.50)**	(1.87)*	(0.95)	(0.94)
IC variable	0.03	0.06	-0.05	-0.020	-0.12
	(1.78)*	(1.84)*	(1.16)	(2.71)***	(3.16)***
SME× IC variable	0.03	0.02	0.10	0.012	0.03
	(1.98)**	(1.71)*	(2.44)**	(1.26)	(0.72)
Large× IC variable	-0.01	-0.05	0.05	0.03	0.06
	(2.07)**	(1.56)	(1.11)	(3.08) ***	(1.66)*
Sector dum	Yes	Yes	Yes	Yes	Yes
Cntry dum	Yes	Yes	Yes	Yes	Yes
Obs	4777	4777	4777	4777	4777
LR chi2	468.33	468.51	469.55	450.01	468.21
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000

Absolute value of z statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Probit regression, marginal effects reported. Dependent variable is whether firm exited.
All regressions have controls for firm characteristics, other investment climate variables and sector, city and country dummies included.

Table 9: Investment Climate by Age of Firm

	Management time	Bribe frequency	Limited competitive pressure	Limited access to finance	Insecure property rights
Lnsize	-0.03	-0.03	-0.03	-0.03	-0.03
	(7.07)***	(7.15)***	(7.03)***	(7.07)***	(6.97)***
mid age firm	-0.05	0.39	0.19	0.21	0.22
	(0.37)	(2.27)**	(2.12)**	(2.00)**	(1.82)*
old firm	-0.18	0.09	0.23	0.14	0.23
	(1.43)	(0.49)	(2.23)**	(1.20)	(1.70)*
IC variable	0.07	0.15	-0.20	-0.12	-0.10
	(1.75)*	(3.72)***	(3.78)***	(3.10)***	(2.80)***
mid age x IC variable	0.02	0.02	0.10	0.09	0.07
	(0.48)	(1.79)*	(2.01)**	(1.91)*	(1.72)*
old firm×IC variable	-0.06	-0.09	0.17	0.06	-0.03
	(1.43)	(2.19)**	(1.26)	(1.23)	(1.03)
Sector, cntry dum	Yes	Yes	Yes	Yes	Yes
Obs	4777	4777	4777	4777	4777
LR chi2	485.25	493.81	489.72	484.93	482.58
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000

Probit regression, marginal effects reported. Dependent variable is whether firm exited.
All regressions have controls for firm characteristics, other investment climate variables and sector, city and country dummies included.
Absolute value of z statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 10: Investment Climate by Ownership

	Management time	Bribe frequency	Limited competitive pressure	Limited access to finance	Insecure property rights
FDI	-0.11	-0.10	-0.21	-0.21	-0.15
	(2.42)**	(2.04)**	(2.42)**	(2.42)**	(1.85)*
IC variable	0.06	0.09	0.06	0.06	0.05
	(1.94)*	(1.94)*	(1.94)*	(1.94)*	(1.41)
FDI×IC variable	0.03	-0.09	0.04	0.04	0.10
	(1.48)	(1.34)	(1.68)*	(1.52)	(2.10)**
Sector, Cntry dum	Yes	Yes	Yes	Yes	Yes
Obs	4777	4777	4777	4777	4777
LR chi2	487.47	497.64	487.47	487.47	481.43
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000

Absolute value of z statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Probit regression, marginal effects reported. Dependent variable is whether firm exited.
All regressions have controls for firm characteristics, other investment climate variables and sector, city and country dummies included.

Table 11: Does the Impact Vary Across Countries by the Level of Financial Development and Rule of Law?

Table11a: Access and cost of finance by financial development

	All	All	Less developed finance	More developed finance	Less developed finance	More developed finance
Lnsize	-0.027	-0.027	-0.018	-0.031	-0.018	-0.029
	(5.62)***	(5.64)***	(2.98)***	(3.59)***	(3.07)***	(3.36)***
gdppc_us	0.016	0.017	0.032	-0.186	0.027	-0.112
	(1.44)	(1.43)	(2.68)***	(4.18)***	(2.30)**	(2.21)**
gdppc_gr	-0.005	-0.006	0.003	-0.002	0.002	0.025
	(2.19)**	(2.64)***	(1.04)	(0.25)	(0.80)	(1.75)*
EU	-0.101	-0.113				
	(4.42)***	(4.95)***				
Balkan	-0.086	-0.090				
	(4.86)***	(5.02)***				
Lack fin access	0.076		0.051	0.075		
	(3.60)***		(2.14)**	(1.16)		
Cost of fin		0.042			0.003	0.191
		(2.33)**			(0.15)	(2.82)***
Sector dum	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4513	4513	3109	1174	3109	1174

Probit regression, marginal effects reported. Dependent variable is whether firm exited.
All regressions have controls for firm characteristics, other investment climate variables and sector and city dummies included.
Absolute value of z statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 11b: Level of legal development and the effect of weak property rights

	Poor rule of law	Strong rule of law	Inefficient bankruptcy processes	Efficient bankruptcy processes	Poor rule of law	Strong rule of law	Poor rule of law	Strong rule of law
Cost to enforce	0.100	-0.033	0.087	0.065				
contracts	(3.12)***	(0.56)	(2.44)**	(1.39)				
Time to get permits					0.131	-0.052		
					(2.15)**	(0.43)		
Court delays							0.093	-0.029
							(2.21)**	(0.45)
Sector dum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country dum	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3116	1552	2780	1732	3116	1552	3116	1552

Probit regression, marginal effects reported. Dependent variable is whether firm exited.
All regressions have controls for firm characteristics, other investment climate variables and sector and city dummies included.
Law" uses the Kaufmann-Kraay variable that is centered on 0; those below 0 are categorized as 'poor' and those above as 'strong'.
"Inefficient Bankruptcy processes" are countries below the median time to go through the official proceedings according to Doing Business.